

## TIME DRIVE

### SUPPLEMENT TO RADIOACTIVE TRACER SURVEY GUIDELINES

After a normal radioactive tracer survey has been run, a “Time Drive” run (or runs) is required for certain wells to indicate whether fluids will migrate upward under operating conditions. **The Time Drive does not need to be run unless specifically requested by the Office of Conservation, Injection and Mining Division.**

1. Flush the well sufficiently to purge all radioactive tracer material from the tracer survey, if necessary.
2. Place the gamma ray detector from 25 to 60 feet above the depth the tracer material previously exited the well bore during the normal tracer survey. For example, if the tracer material exited the well bore at 2000 feet, placing the detector 25 feet above the exit point is acceptable. If material is exiting 4000 feet or lower, placing the detector 60 feet above the exit point is acceptable.
3. Start injecting into the well at the maximum pressure needed for the time drive. The injection pressure must remain constant for the duration of the test. When establishing a maximum pressure, TAKE PRECAUTIONS NOT TO DAMAGE THE WELL OR CAUSE INJURY TO PERSONNEL. Note that the Office of Conservation will not be held liable for damage to the well or injury to personnel caused by inadequate operating precautions.
4. Begin recording in time-drive mode, with the tracer detector stationary.
5. Release tracer material above the stationary detector. Record until the tracer material is detected moving downward past the stationary detector PLUS:
  - A. Five minutes PLUS;
  - B. An additional one-half (1/2) minute times the number of feet the tracer detector is positioned above the depth the tracer material previously exited the well.

Example: If the tracer detector is placed 30 feet above the depth the tracer material exited the well bore, the time drive must last at least 20 minutes past the time when the tracer material passed the detector.  $(5 + (1/2 \times 30))$

6. If the tracer material is detected coming back past the detector, pull the detector up about 10 feet higher and repeat the process with a new radioactive slug. The “10 feet” is only a suggestion. If you have reason to believe the tracer will migrate upward to a certain depth, you may begin Step 2 just below this depth to see the tracer passing by; then run another log just above that point to see whether it gets that high.
7. Write the following on the log alongside the time-drive run:
  - A. Injection pressure. Also indicated any variation in pressure during the time drive.
  - B. Injection Rate.
  - C. Length of time-drive in minutes, beginning and ending clock times, or 1-minute intervals indicated on the log.